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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,472	09/16/2003	Motokazu Kobayashi	03500.017564	9615

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
LEE, EUGENE	

ART UNIT	PAPER NUMBER
2815	

DATE MAILED: 08/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/662,472	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Eugene Lee	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) *6-10* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/26/06 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 thru 4, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Izuha et al. 6,060,735. Izuha discloses (see, for example, FIG. 3) a thin film dielectric device (piezoelectric element) 3 comprising a dielectric thin film (piezoelectric film) 5, lower electrode 4, and upper electrode 6. In column 4, lines 51-54, Izuha discloses the dielectric thin film comprising (Pb, La)(Zr,Ti) O_3 which is a piezoelectric film and a perovskite oxide. In column 7, lines 8-13, Izuha discloses the lower electrode comprising a conductive perovskite oxide. In column 5, lines 3-22, Izuha discloses the bottom electrode film and said dielectric film are composed of continuous columnar grains (mixed region) wherein the bottom electrode, dielectric, and top electrode share the columnar grains. The columnar grains are composed of

crystal grains a, b, c which grow from each other. In FIG. 4A, Izuha discloses the bottom electrode, dielectric thin film, and lower electrode sharing the columnar grains A (a region where crystals of said lower electrode and/or said upper electrode and crystals of said piezoelectric film are mixed exists between said lower electrode and/or said upper electrode and said piezoelectric film). These columnar grains A spread in a direction of the thickness of the dielectric thin film (piezoelectric film).

Regarding claim 2, see, for example, FIG. 4A, wherein Izuha discloses the columnar grain (mixed region) A which is formed from a perovskite oxide.

Regarding claim 3 and the limitation "sol-gel method", this is a product-by-process limitation.

Regarding claim 4, see, for example, column 7, lines 1-16, wherein Izuha discloses the lower electrode may comprising $SrRuO_3$ (M^IRuO_3) and column 4, lines 51-54, wherein Izuha discloses the dielectric thin film comprising (Pb, La)(Zr,Ti) O_3.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Izuha et al. '735 as applied to the claims 1-4, and 11 above, and further in view of Murai 6,398,349 B1. Izuha does not disclose a pressure chamber, an ink discharge port, a vibrating plate, and ink. However,

Murai discloses (see, for example, FIG. 7) an ink jet printing head comprising a pressure chamber 21, nozzle (ink discharge port) 11, diaphragm (vibrating plate) 30, and ink. In column 6, lines 5-44, Murai discloses the pressure chambers are spaces for storing ink and the diaphragm deforms (from the piezoelectric device) to pressure ink to discharge from the nozzle 11. It would have been obvious to one of ordinary skill in the art at the time of invention to have a pressure chamber, an ink discharge port, a vibrating plate, and ink in order to have the perovskite structure utilized in an electronic device such as an ink jet printing head.

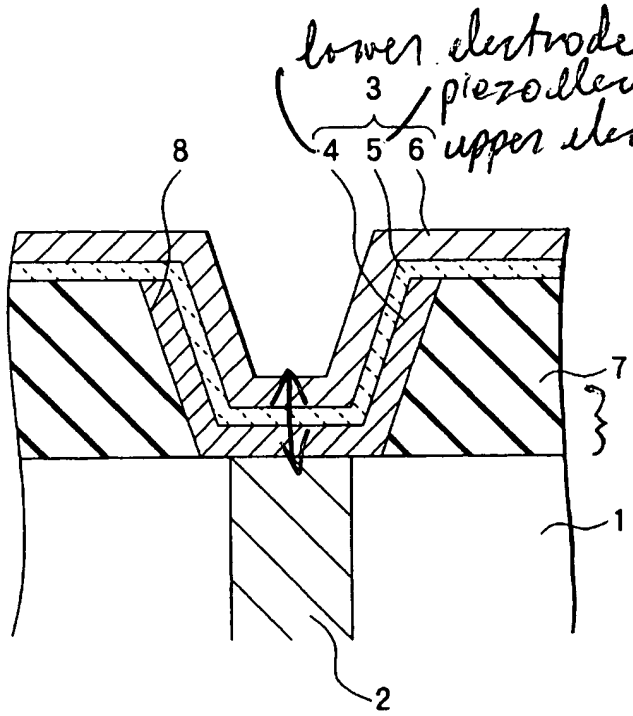
Product-by-Process Limitations

While not objectionable, the Office reminds Applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim,* 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.,* 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or *otherwise*. Note that applicant has the burden of proof in such cases, as the above case law makes clear. Thus, no patentable weight will be given to those process steps which do not add structural limitations to the final product.

Response to Arguments

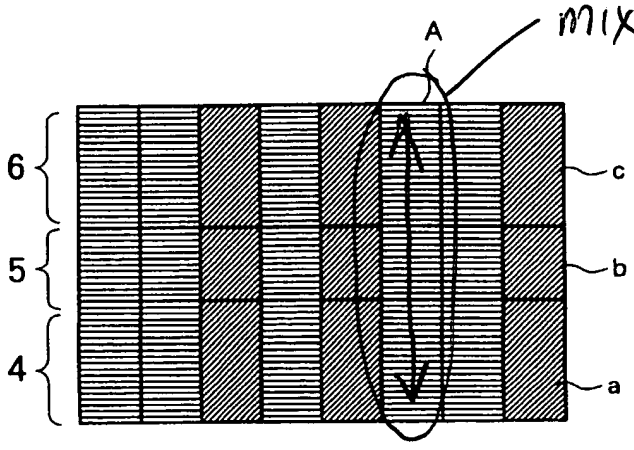
6. Applicant's arguments filed 6/26/06 have been fully considered but they are not persuasive. Please see figures below.

FIG. 3



= thickness of said piezoelectric film (which extends vertically; ~~which~~ it spreads in the same vertical direction as the columnar grain A or mixed region)

FIG. 4A



no interface b/t lower electrode/upper electrode/piezoelectric film b/c a single columnar grain A extends through the whole region

this region is also a mixed region

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 571-272-1733. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eugene Lee
August 17, 2006

EUGENE LEE
PRIMARY EXAMINER